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(54) MANUFACTURE OF SEMICONDUCTOR ELEMENT

(57)Abstract:

PURPOSE: To achieve electrical isolation between elements easily by a method wherein plateau-shape structures which have required faces are exposed on the surface of a group IV crystal substrate and then a III-V compound semiconductor layer is formed by an atomic layer epitaxial growth method. CONSTITUTION: GaCl and AsH3 are employed as group III raw gas and group V raw gas respectively and atomic layer epitaxial growth is repeated 2000 times on a wafer at 450° C. The film thickness of a GaAs growth layer 19 obtained by slant polishing is, for instance, 7000Å on a face (211) and 4000Å on a face (110). AuGe ohmic contacts 20 are formed on four corners of the upper surface of each plateau-shape structure of the wafer. Electric conduction is recognized between the ohmic contacts formed on the same face (211) and, by a Hall measurement, the conductivity type is n-type and the carrier concentration is $1 \times 1016cm-3$. On the other hand, the electric conduction is not recognized between adjoining plateau-type growth layers so that the electrical isolation between elements can be achieved completely. Thus, the electrical isolation between the elements can be achieved easily without making a process complicated.
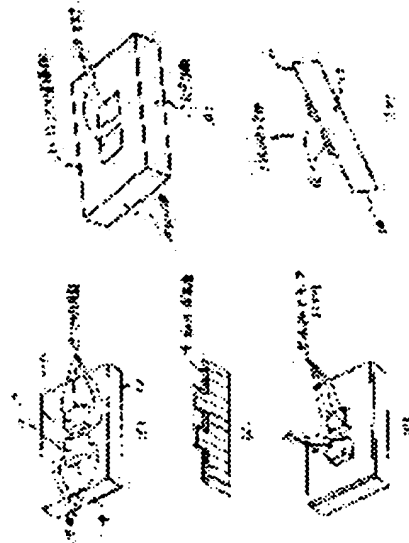
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